

Figure 1

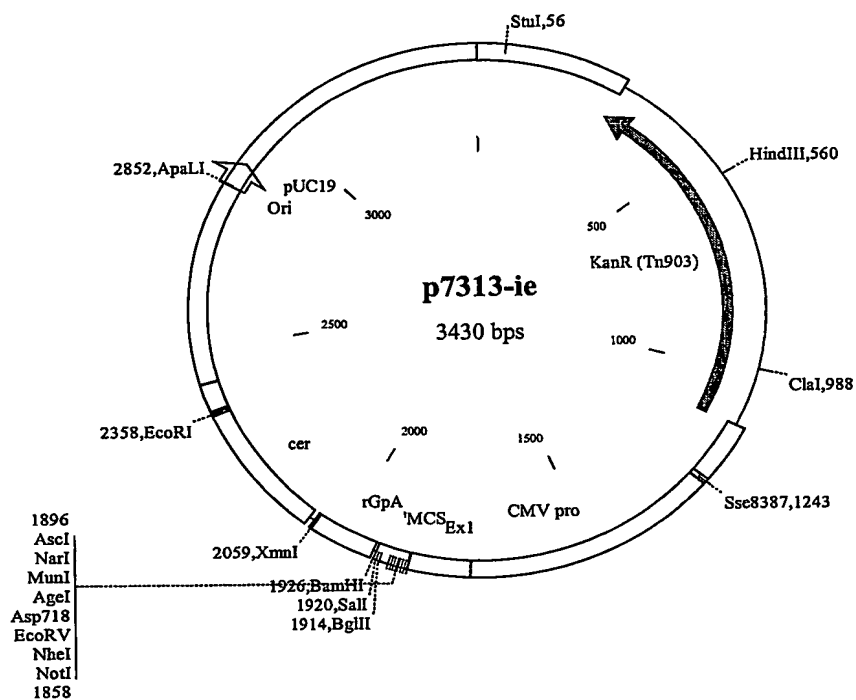
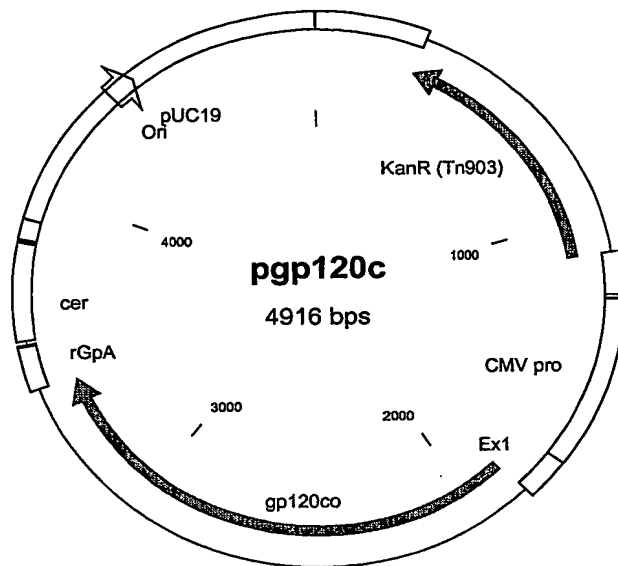


Figure 2Map of *pgp120c*:

The amino acid sequence of the W61D gp120 is below. The signal sequence is underlined and bold, up to the predicted cleavage site between amino acids 29 and 30. This is the sequence removed in *dsgp120* (pRix12 etc).

MKVKETRKNYQHLLRWGTMLLGMLMICSAAEQLWVTVYYGVPVWKEATTTLFCASDAKAYDTEVHNVWATH
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 SNGWTGEIRKGEIKNCSFNITTSIRDKVQKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSSVMTQA
 CPKVSFEPIPIHYCAPAGFAILKCNKTFDGLCTNVSTVQCTHGIRPVVSTQLLLNGSLAESEVIRSD
 NFMNTKTIIVQLNESVAINCTRPNNNTRKGIHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLQIIVI
 KLREHFGNKTIFNQSSGGDPEIVRHSFNCGGEFFYCDTTQLFNSTWNGTEGNNTTEGNSTITLPCRIKQII
 NMWQEVGKAMYAPPIGGQIRCSSNITGLLLTRDGGTEGNGTENETEIFRPGGGDMRDNRSELYKYKVVKV
 EPLGVAPTRAKRRVVQR [SEQ ID NO: 49]

The codon optimised DNA sequence for the W61D gp120 gene is:

ATGAAGGTCAAGGAGACCAGAAAGAACTACCAGCATCTGTGGCGCTGGGGCACCATGCTCCTGGGAATGCT
 GATGATCTGCTCCGCCCGAGCAGCTGTGGGTACCGTCTACTACGGCGTGCTGTGTGGAAGGAGGCCA
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 GCTTGCGTGCCTACGGACCCCAACCCCAAGGAGTGGTGTCTGGGAAACGTGACCGAGTACTTCAACATGTG
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Figure 2 continued

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ACGGCACCGAGGGCAACAACACAGAGGGGAACTCCACTATCACCTCCCTTGCCGCATCAAGCAGATCATC
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CATCACCGGCCTGCTGCTCACCAGAGACGGGGGCACCGAGGGCAACGGCACGGAGAACGAGACGGAGATCT
TCAGGCCCCGGCGGGCGACATGAGGGATAACTGGCGGAGCGAGCTGTACAAGTACAAGGTGGTGAAGGTG
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Figure 3

Map of pRix15244:

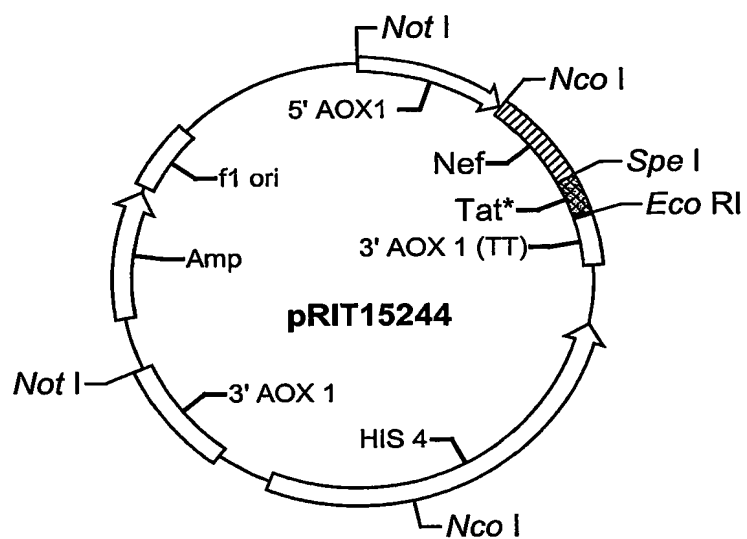
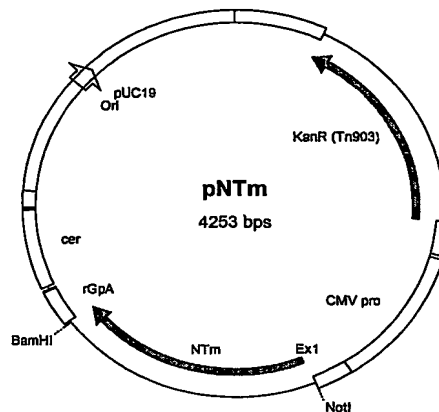


Figure 4

Plasmid pNTm:



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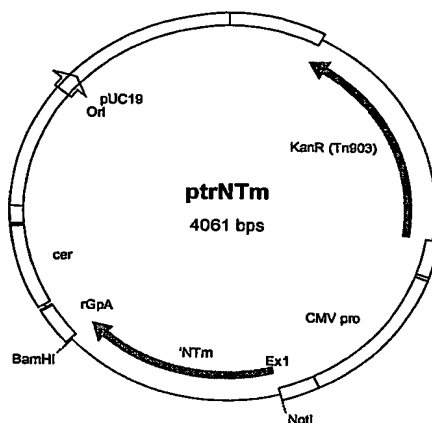
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Amino acid sequence of antigen:

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 PGPVRYPLTFGWCYKLVPEPDKVEEANKGENTSLLHPVSLHGMDDPEREVLEWRFD SRLAFH
 HVARELHPEYFKNCTSEPVDPRLEPWKHPGSQPKTACTNCYCKKCCFHCQVCFTTAALGISYGRK
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Figure 5

Plasmid ptrNTm:



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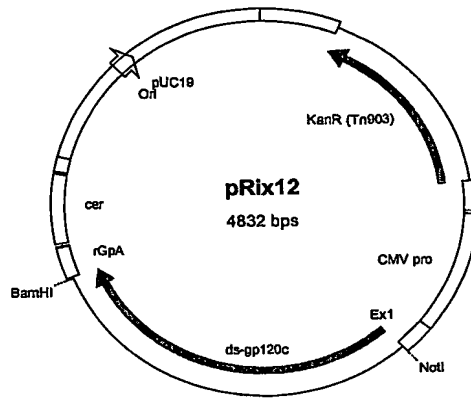
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Amino acid sequence of antigen:

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 TSEVPDPRLEPWKHPGSGPKTACTNCYCKKCFHCQVCFITAAALGISYGRKKRRQRRRPPQGSQTHQVSL
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Figure 6

Plasmid pRix12:



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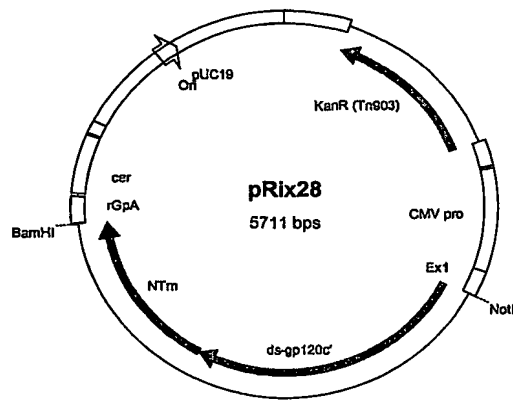
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Amino acid sequence of antigen:

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 NCGGEFFYCDTTQLFNSTWNGTEGNNT EGNSTITLPCRIKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL
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 NO: 56]

Figure 7

Plasmid pRix28:



Sequence of insert:

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Figure 7 continued

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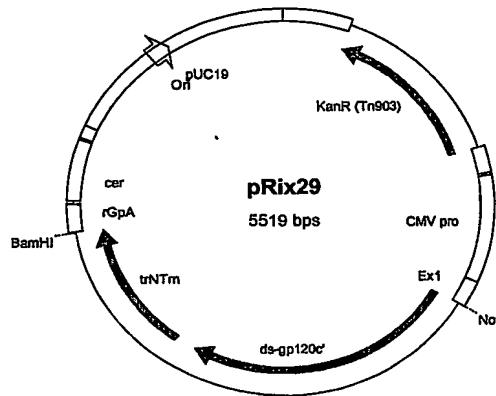
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Amino acid sequence of antigen:

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[SEQ ID NO: 58]

Figure 8

Plasmid pRix29:



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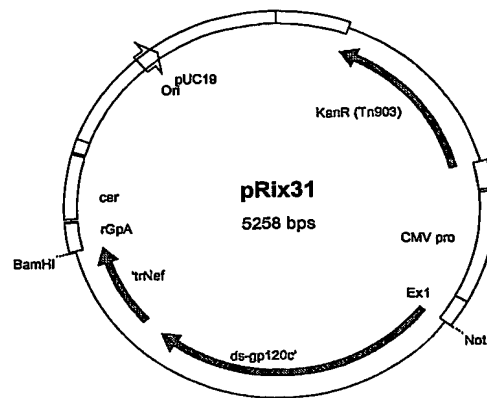
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Figure 8 continued**Amino acid sequence of antigen:**

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Figure 9

Plasmid pRix31:



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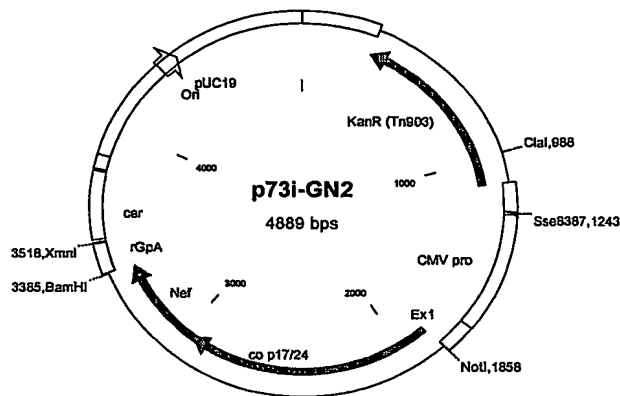
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Amino acid sequence of antigen:

Figure 9 continued

MAEQLWVTVYYGVPVWKEATTTLFCASDAKAYDTEVHNVWATHACVPTDPNPQEVVLGNVTEYFNMWKNNM
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[SEQ ID NO: 62]

Figure 10

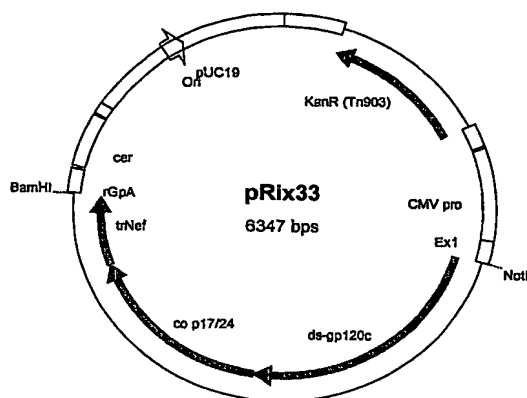


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Figure 11

Plasmid pRix33:



Sequence of insert:

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Figure 11 continued

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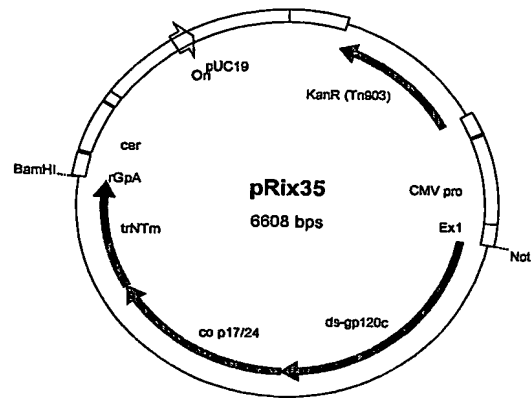
Amino acid sequence of antigen:

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 FDGKGLCTINVSTVQCTHGIRPVVSTQLLLNGSLAEFVIRSDNFMNTKTIIVQLNESVAINCTRPNNT
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[SEQ ID NO: 65]

Figure 12

Plasmid pRix35:



Sequence of insert

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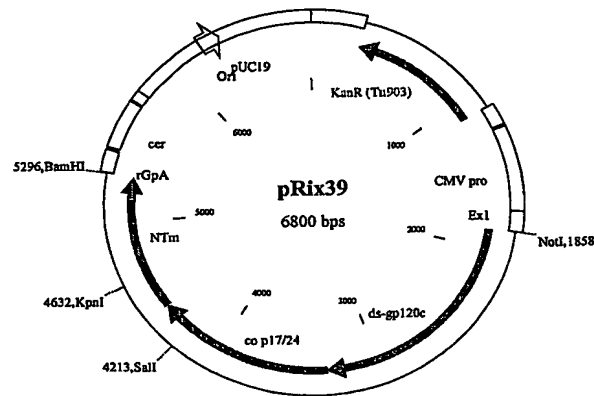
Figure 12 continued

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Amino acid sequence of antigen:

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Figure 13



Sequence of insert:

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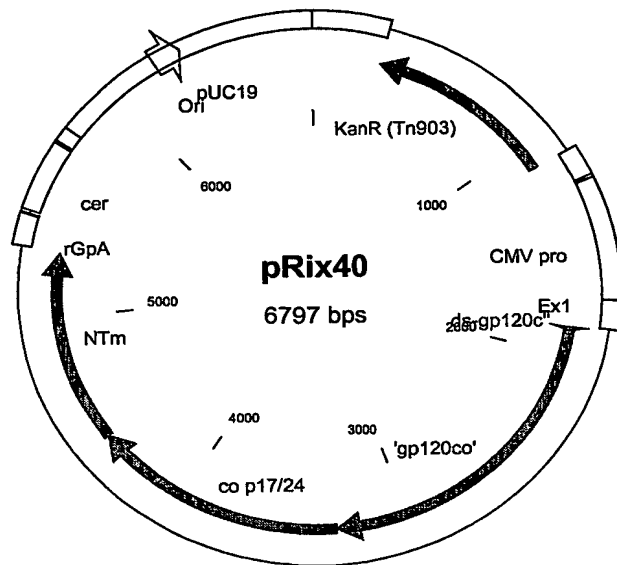
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Amino acid sequence of antigen:

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 VPVEPDKVEEANKGENTSLLHPVSLHGMDDPEREVLEWRFSRLAFHHVARELHPEYFKNCTSEPVDPRL E
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 PTGPKE [SEQ ID NO: 69]

Figure 14

pRix40



DNA sequence of insert

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 GTGGATCAGATGCACGAGGACATCATCTCTGTGGGACCAGTCCCTGAAGCCCTGCGTGAAGCTGACGCC
 TCTCTGCGTGACACTGGACTGTGACGACGTCAACACCACCAACAGCACTACCACCACCAGCAACGGCTGGA
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 CGTAAGGGCATCCACATCGGGCCTGGACGGGCCTTCTATGCCGCCCGCAAGATCATCGGCGACATCCGGCA
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 AGATCCTGGGGCAATTGCAGCCATCCCTCCAGACCGGGAGTGAAGAGCTGAGGTCCTTGTATAACACAGTG
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Figure 14 continued

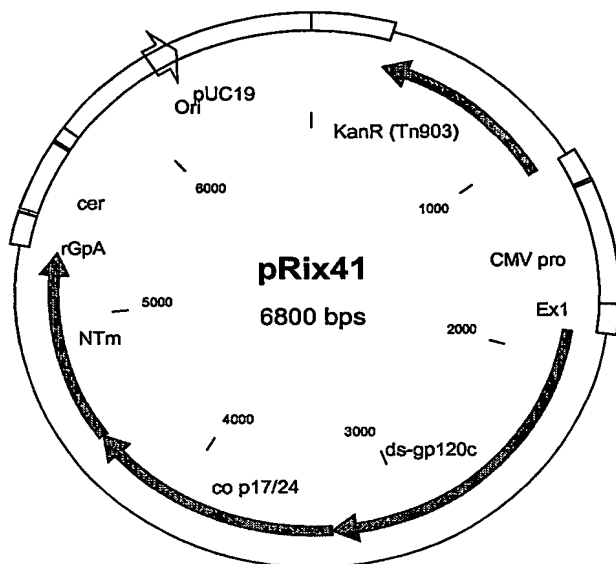
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 ACAGGCCCCGAAGGAATAA [SEQ ID NO: 70]

Aminoacid sequence of insert

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 QKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSSVMTQACPKVSFEPPIPIHYCAPAGFAILKCNNKT
 FDGKGLCTNVSTVQCTHGIRPVVSTQLLNLGSLAEEVVIRSDNFMNDTKTIIVQLNESVAINCTRPNNT
 RKGIIHIGPGRFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF
 NCGGEFFYCDTTQLFNSTWNGTEGNNTTEGNSTITLPCRIKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL
 LLTRDGGTEGNGTENETEIFRPGGDMRDNRSELYKYKVVKEPLGVAPTRAKRRVVQRMGARASVLSGG
 ELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLETSEGCRQILGQLQPSLQTGSEELRSLYNTV
 ATLYCVHQRIEIKDTKEALDKIEEEQNKSKKKAQQAADTGHSNQVSQNYPIVQNIQGMVHQAISPRTLN
 AWWKVVEEKAFSPEVIPMFSALEGATPQDLNLTMLNTVGGHQAMQMLKETINEEAAEWDRVHPVHAGPIA
 PGQMREPRGSDIAGTTSTLQEQIGWMTNNPPIPVGEIYKRWIILGLNKIVRMYSPTSILDIRQGPKEPRD
 YVDRFYKTLRAEQASQEVKNWMTETLLVQANANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGK
 WSKSSVVGWPTVRERMRAEPAADGVGAASRDLEKHGAITSSNTAATNAACAWLEAQEEEEVGFVTPQVP
 LRPMTYKAAVDLSHFLKEKGGLIHSQRRQDILDWIYHTQGYFPDWQNYTPGPGVRYPLTFGWCKLV
 PVEPDKVEEANKGENTSLHLPVSLHGMDPEREVLEWRFD SRLAFHHVARELHPEYFKNCTSEPVDPRLP
 WKHPGSQPKTACTNCYCKKCCFHCQVCFITAALGISYGRKKRRQRRRPPQGSQTHQVSLSKQPTSQSKGEP
 TGPKE [SEQ ID NO: 71]

Figure 15

pRix41

**DNA sequence of insert**

```

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CGGACCCCCAACCCCCAGGAGGTGGTGCTGGGAAACGTGACCGAGTACTTCAACATGTGGAAGAATAACATG
GTGGATCAGATGCACGAGGACATCATCTCTGTGGGACCAGTCCCCTGAAGCCCTGCGTGGAAGCTGACGCC
TCTCTGCGTGACACTGGACTGTGACGACGTCAACACCACCAACAGCACTACCACCACCAGCAACGGCTGGA
CCGGAGAGATTCCGAAGGGCGAGATCAAGAACTGCTCCTTCAATATCACGACCTCGATCAGAGACAAGGTG
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Figure 15 continued

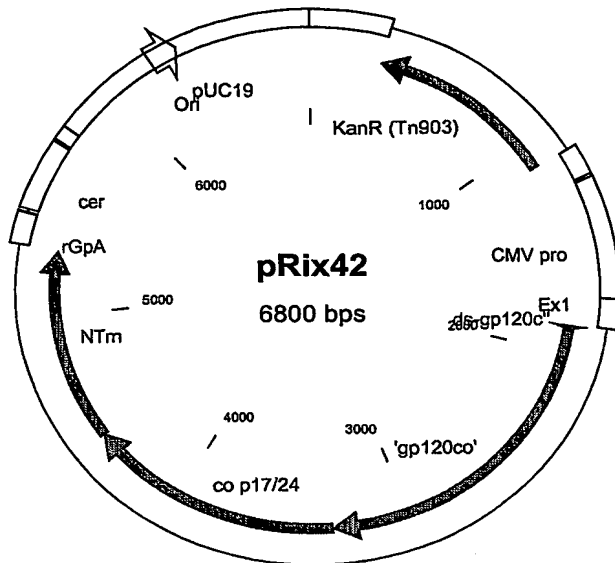
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Aminoacid sequence of insert

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 FDGKGLCTNVSTVQCTHGIRPVVSTQLLLNGSLAEEVVIRSDNFMDNTKTIIVQLNESVAINCSTRPNNNT
 RKGIIHIGPGRFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF
 NCGGEFFYCDTTLQFNSTWNGTEGNNTTEGNSTITLPCRKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL
 LLTRDGGTEGNNGTENETEIFRPGGGDMRDNRSELYKYKVVKVEPLGVAPTRAKRRVVQRMGARASVLSGG
 ELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLETSEGCRQILGQLQPSLQTGSEELRSLYNTV
 ATLYCVHQRIEIKDTKEALDKIEEEQNKSKKKAQAAADTGHSNQVSQNYPIVQNIQGMVHQAI SPRTLN
 AWWKVVEEKAFSPEVIPMFSALSEGATPQDLNLTMLNTVGGHQAAMQMLKETINEEAAEWDRVHPVHAGPIA
 PGQMREPRGSDIAGTTSTLQEQIGWMTNNPPIPVGEIYKRWII LGLNKIVRMYSPITSILDIRQGPKEPFRD
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 PTGPKE [SEQ ID NO: 73]

Figure 16

pRix42

**DNA sequence of insert**

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Figure 16 continued

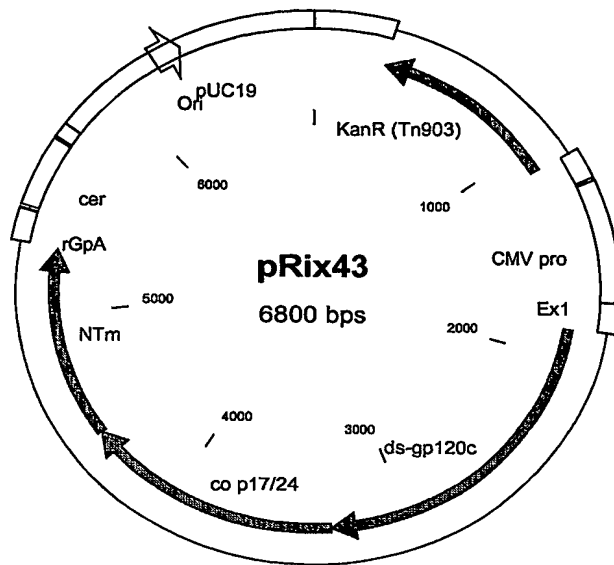
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Aminoacid sequence of insert

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 QKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSSVMTQACPKVSFEPIPIHYCAPAGFAILKCNNKT
 FDGKGLCTNVSTVQCTHGIRPVVSTQLLLNGLSLAEEVVIRSDNFMDNTKTIIVQLNESVAINCTRPNNT
 RKGIIHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIFKNQSSGGDPEIVRHSF
 NCGGEFFYCDTTQLFNSTWNGTEGNNTTEGNSTITLPCRICKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL
 LLTRDGGTEGNNGTENETEIFRPGGGDMRDNRSELYKYKVVKVEPLGVAPTRAKRRVVQRMGARASVLSGG
 ELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLETSEGCRQILGQLQPSLQTGSEELRSLYNTV
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 PGQMREPRGSDIAGTTSTLQEQIGWMTNPPPIPVGEIYKRWIILGLNKIVRMYSPITSILDIRQGPKEPFRD
 YVDRFYKTLRAEQASQEVKNWMTETLLVQANANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGG
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 PTGPKE [SEQ ID NO: 75]

Figure 17

pRix43

**DNA sequence of insert**

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 CCTTCGAACCAATCCCGATCCATTACTGTGCCCCCTGCCGGATTTCGCGATCCTCAAGTGTAACAACAAGACC
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Figure 17 continued

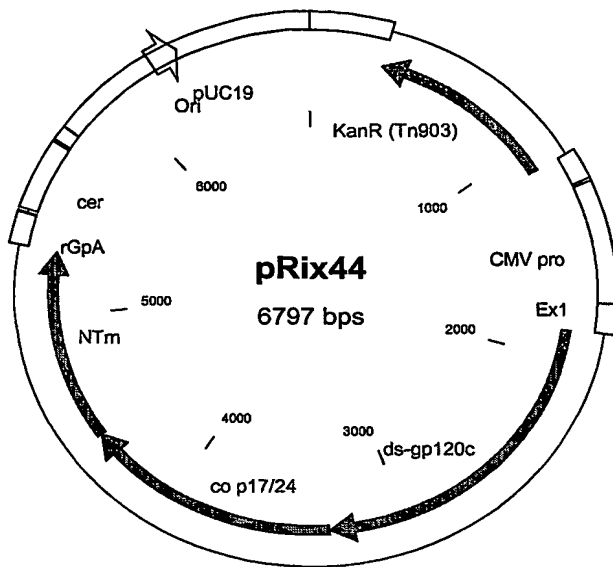
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Aminoacid sequence of insert

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 FDGKGLCTNVSTVQCTHGIRPVVSTQLLLNGSLAE EEEVVIRSDNFMDNTKTIIVQLNESVAINCTRPNNNT
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 LLTRDGGTEGNGTENETEIFRPGGGDMRDNRSELYKYKVVKVEPLGVAPTRAKRRVVRMGARASVLSGG
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 VPVEPDKVEEANKGENTSAAHPVSLHGMDDPEREVLEWRFSRLAFHHVARELHPEYFKNCTSEPVDPRL
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 PTGPKE [SEQ ID NO: 77]

Figure 18

pRix44

**DNA sequence of insert**

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Figure 18 continued

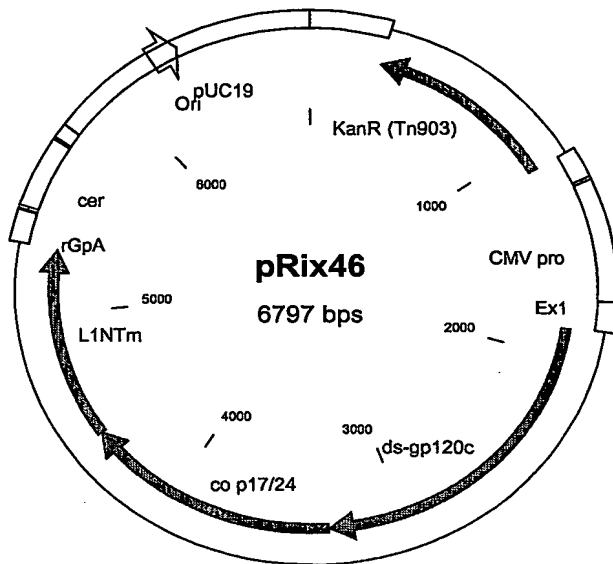
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 RKGIIHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIFKNQSSGGDPEIVRHSF
 NCGGEFFYCDTTQLFNSTWNGTEGNNTTEGNSTITLPCRKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL
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 TGPKE [SEQ ID NO: 79]

Figure 19

pRix46

**DNA sequence of insert**

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Figure 19 continued

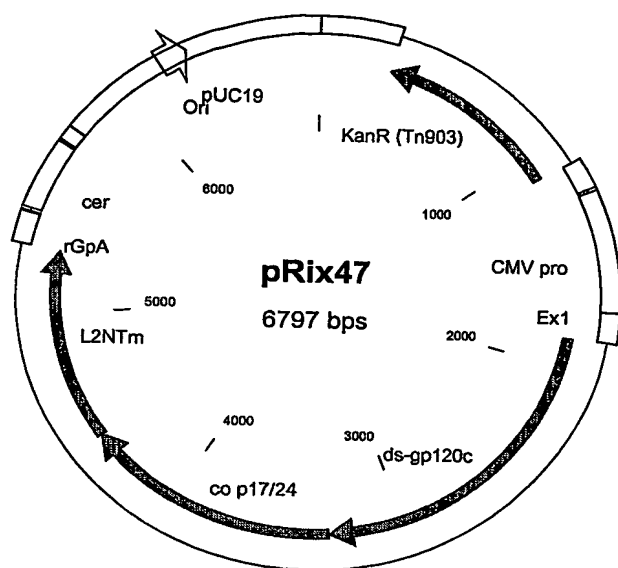
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Aminoacid sequence of insert

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 QKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSSVMTQACPKVSFEPIPIHYCAPAGFAILKCNKNT
 FDGKGLCTNVSTVQCCTHGIRPVVSTQLLNLGSLAEVEVIRSDNFMDNTKTIIVQLNESVAINCTRPNNT
 RKGIIHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIFKNQSSGGDPPIVRHSF
 NCGGEFFYCDTTQLFNSTWNGTEGNNTGNSTITLPCRKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL
 LLTRDGGTEGNNGTENETEIFRPGGDMRDNRSELYKYKVVKEPLGVAPTRAKRRVVQRMGARASVLSGG
 ELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLETSEGCRQILGQLQPSLQTGSEELRSLYNTV
 ATLYCVHQRIEIKDTKEALDKIEEBQNKSKKKAQQAADTGHNSQVSQNYPIVQNIQGMVHQAI SPRTL N
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 PGQMREPRGSDIAGTTSTLQEQIGWMTNNPPIPVGEIYKRWIILGLNKIVRMYSPITSILDIRQGPKEPFRD
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 TGPKE [SEQ ID NO: 81]

Figure 20

pRix47

**DNA sequence of insert**

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Figure 20 continued

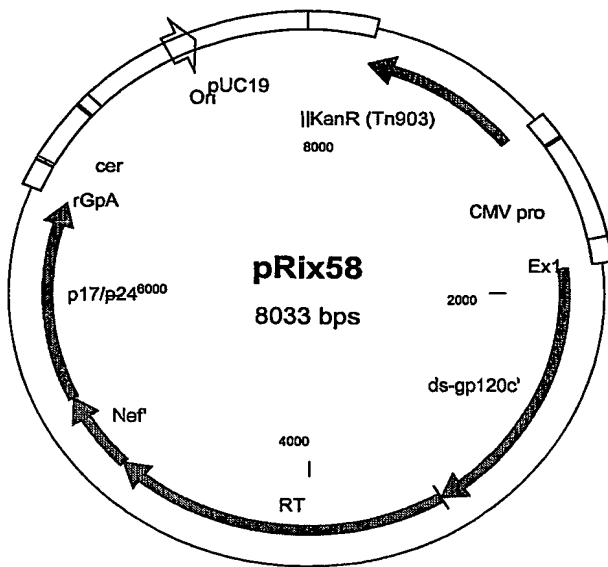
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 TGGAAGAGATGATGACCGCCTGTGAGGGAGTAGGCCGACCCGGACACAAAGCCAGAGTGTTGATGGGCAAG
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 TTAAGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTTTAAAGAAAAGGGGGGACTGGAAGG
 GCTAATTCACCTCCCAACGAAGACAAGATATCCTTGATCTGTGGATCTACCACACACAAGGCTACTTCCCTG
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 CCAGTTGAGCCAGATAAGGTAGAAGAGGCCAATAAAGGAGAGAACACCAGCTTGGCACACCCCTGTGAGCCT
 GCATGGAATGGATGACCCTGAGAGAGAAGTGTTAGAGTGGAGGTTTGACAGCCGCTAGCATTTTCATCACG
 TGGCCCGAGAGCTGCATCCGGAGTACTTCAAGAACTGCACTAGTGAGCCAGTAGATCTTAGACTAGAGCCC
 TGGAAGCATCCAGGAAGTCAGCCTAAAACCTGCTTGTACCAATTGCTATTGTAAAAAGTGTTGCTTTTCATTG
 CCAAGTTTGTTCATAACAGCTGCCTTAGGCATCTCCTATGGCAGGAAGAAGCGGAGACAGCGACGAAGAC
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Aminoacid sequence of insert

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 TGPKE [SEQ ID NO: 83]

Figure 21

pRix58

**DNA sequence of insert**

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 GTGGATCAGATGCACGAGGACATCATCTCTGTGGGACCAGTCCCTGAAGCCCTGCGTGAAGCTGACGCC
 TCTCTGCGTGACACTGGACTGTGACGACGTCAACACCACCAACAGCACTACCACCACCAGCAACGGCTGGA
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 CCTTCGAACCAATCCCGATCCATTACTGTGCCCCGTCCGGATTTCGCGATCCTCAAGTGTAAACAACAGACC
 TTCGACGGGAAGGGCCTGTGCACCAACGTGACGACGGTGCAGTGCACCCATGGCATCCGCCCCGTGCTGAG
 CACCCAGCTGCTGCTGAACGGGTCCCTGGCTGAGGAGGAGGTGGTGATCCGGTCCGACAACCTTCATGGACA
 ACACCAAGACAATCATCGTCCAGCTGAACGAGTCTGTGGCGATTAACTGTACCCGGCCTAACAACAACACC
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 GGCCCATTTGCAACCTCTCCCGCGCCAGTGGAATAACACCCCTGAAGCAGATCGTGATCAAGCTGAGAGAGC
 ACTTTGGAAACAAGACCATCAAGTTCAATCAGAGTTCTGGCGGAGACCCCGAGATCGTGCGGCACTCCTTC
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 AGGTGGGAAAGGCCATGTATGCCCCCCCCATCGGGGGCCAGATCCGCTGCTCCTCCAACATCACCGGCCCTG
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 CGGCGACATGAGGGATAACTGGCGGAGCGAGCTGTACAAGTACAAGGTGGTGAAGGTGGAGCCGCTCGGCC
 TGGCCCCCACC CGGCCAAGCGCCGCGTCTGTGCAGAGAATGGGCCCCATCAGTCCCATCGAGACCGTGCCG
 GTGAAGCTGAAACCCGGGATGGACGGCCCCAAGGTCAAGCAGTGGCCACTCACCGAGGAGAAGATCAAGGC
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 AATAAGCGGACCCAGGATTTCTGGGAGGTCCAGCTGGGCATCCCCCATCCGGCCGGCCTGAAGAAGAAGAA
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Figure 21 continued

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CACCAGAGGATCGAGATTAAGGATACCAAGGAGGCCCTTGGACAAAATTGAGGAGGAGCAAAACAAGAGCAA
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CCTCAATACAATGCTTAATACCGTGGGCGGCCATCAGCCCGCCATGCAAAATGTTGAAGGAGACTATCAACG
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TCCCATCCCAGTTGGAGAAATCTATAAACGGTGGATCATCCTGGGCCTGAACAAGATCGTGCGCATGTACT
CTCCGACATCCATCCTTGACATTAGACAGGGACCCAAAGAGCCTTTTAGGGATTACGTGACCCGGTTTTAT
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Aminoacid sequence of insert

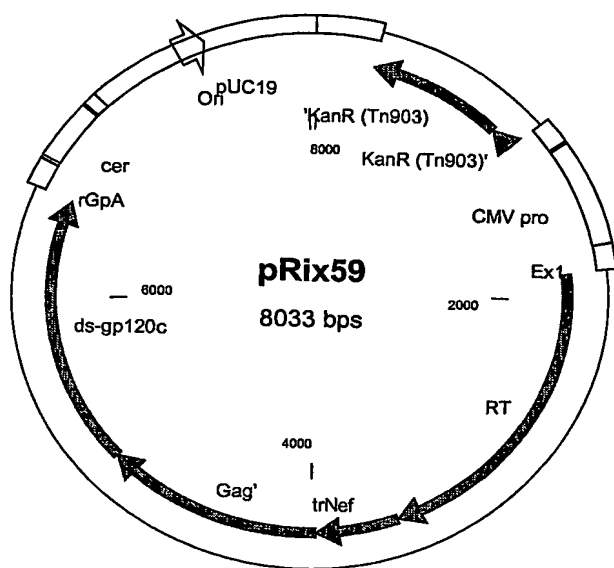
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FDGKGLCTNVSTVQCTHGIRPVVSTQLLLNGSLAEEVVIRSDNFMDNTKTIIVQLNESVAINCTRPNNT
RKGIIHGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIFKNQSSGGDPEIVRHSF
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Figure 21 continued

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NO: 85]

Figure 22

pRix59

**DNA sequence of insert**

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 GTGACGGACAGCCAGTACGCGCTGGGCATTATTTCAGGCCCAGCCGACAGTCCGAGAGCGAACTGGTGAA
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 GCGGCAACGAGCAGTTCGACAAGCTGGTGAAGTGCAGGGGATTAGAAAGGTGCTGATGGTGGGTTTTCCAGTC
 ACACCTCAGGTACCTTTAAGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTTTAAAGAAAA
 GGGGGGACTGGAAGGGCTAATTCACCTCCCAAAGAAGACAAGATATCCTTGATCTGTGGATCTACCACACAC
 AAGGCTACTTCCCTGATTGGCAGAACTACACACCAGGGCCAGGGGTGAGATATCCACTGACCTTTGGATGG
 TGCTACAAGCTAGTACCAGTTGAGCCAGATAAGGTAGAAGAGGCCAATAAAGGAGAGAACACCAGCTTGTT
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Figure 22 continued

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 GGACAAAATTGAGGAGGAGCAAAAACAAGAGCAAGAAGAAGGCCAGCAGGCAGCTGCTGACACTGGGCATA
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Aminoacid sequence of insert

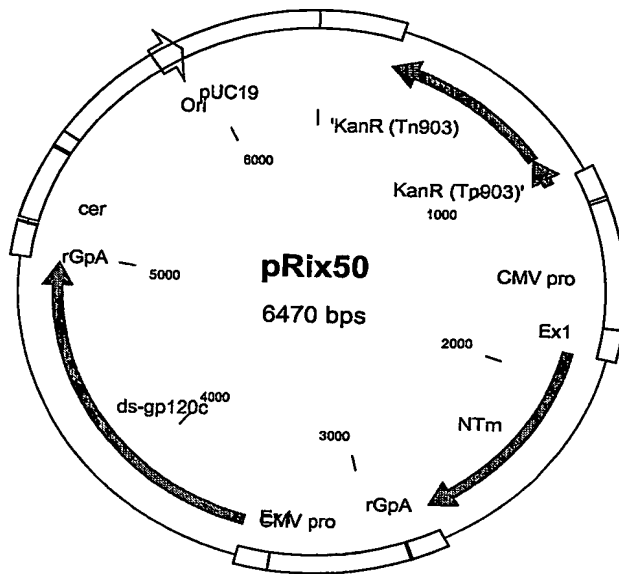
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Figure 22 continued

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NO: 87]

Figure 23

pRix50

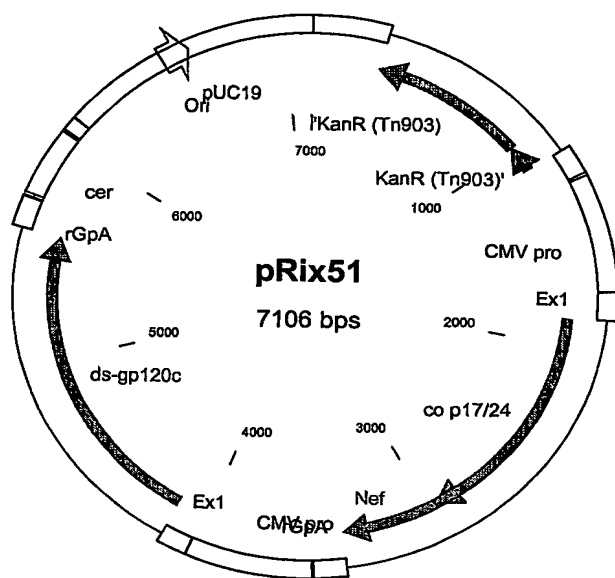


DNA and amino acid sequences of inserts:

Identical to pNTm and pRix12

Figure 24

pRix51

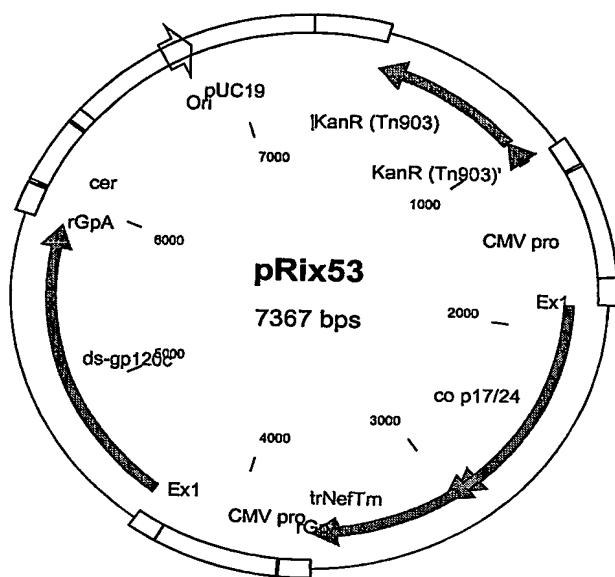


DNA and amino acid sequences of inserts:

Identical to p73L-GN2 and pRix12

Figure 25

pRix53

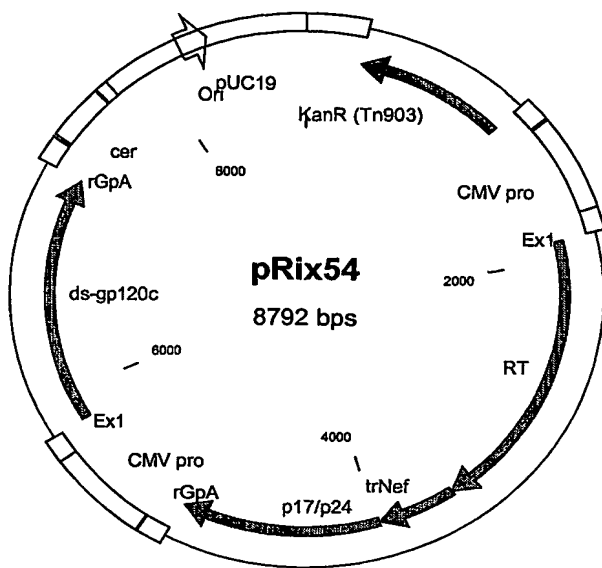


DNA and amino acid sequences of inserts:

Identical to pRix52 and pRix12

Figure 26

pRix54

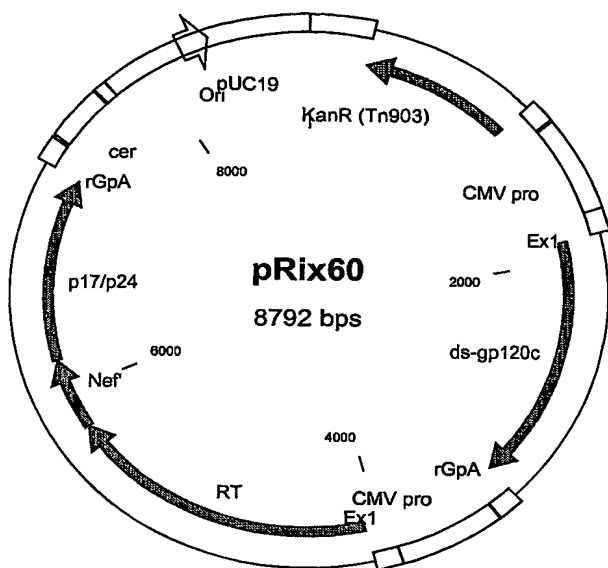


DNA and amino acid sequences of inserts:

Identical to pT-RNG and pRix12

Figure 27

pRix60

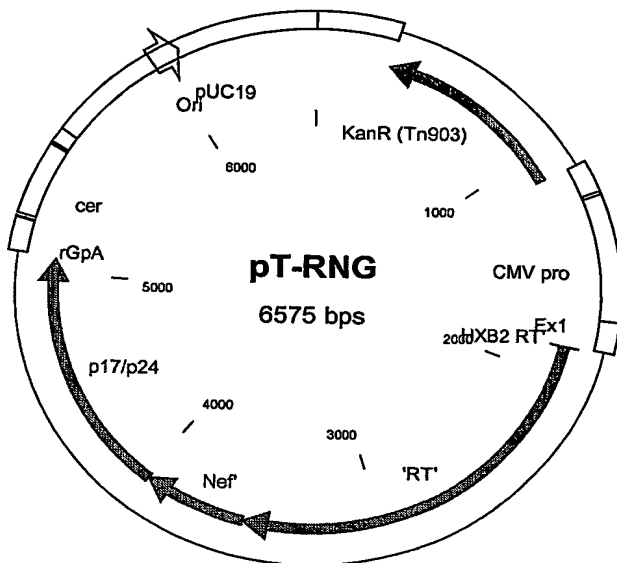


DNA and amino acid sequences of inserts:

Identical to pRix12 and pT-rng

Figure 28

pT-RNG



DNA sequence of insert:

```

ATGGGCCCCATCAGTCCCATCGAGACCGTGCCGGTGAAGCTGAAACCCGGGATGGACGGCCCCAAGGTCAA
GCAGTGGCCACTCACCGAGGAGAAGATCAAGGCCCTGGTGGAGATCTGCACCGAGATGGAGAAAGAGGGCA
AGATCAGCAAGATCGGGCCTGAGAACCATACAACACCCCCGTGTTTGCCATCAAGAAGAAGGACAGCACC
AAGTGGCGCAAGCTGGTGGATTTCGGGGAGCTGAATAAGCGGACCCAGGATTTCTGGGAGGTCCAGCTGGG
CATCCCCCATCCGGCCGGCCTGAAGAAGAAGAAGAGCGTGACCGTGCTGGACGTGGGCGACGCTTACTTCA
GCGTCCCTCTGGACGAGGACTTTAGAAAGTACACCGCCTTTACCATCCCATCTATCAACAACGAGACCCCT
GGCATCAGATATCAGTACAACGTCTCTCCCCAGGGCTGGAAGGGCTCTCCCCGCCATTTTCAGAGCTCCAT
GACCAAGATCCTGGAGCCGTTTCGGAAGCAGAACCCCGATATCGTCATCTACCAGTACATGGACGACCTGT
ACGTGGGCTCTGACCTGGAAATCGGGCAGCATCGCACGAAGATTGAGGAGCTGAGGCAGCATCTGCTGAGA
TGGGGCCTGACCACTCCGGACAAGAAGCATCAGACGAAGATTGAGGAGCTGAGGCAGCATCTGCTGAGA
TCCCCACAAGTGGACCGTGACGCTATCGTCTCTCCCCGAGAAGGACAGCTGGACCGTGAACGACATCCAGA
AGCTGGTGGGCAAGCTCAACTGGGCTAGCCAGATCTATCCCGGGATCAAGGTGCGCCAGCTCTGCAAGCTG
CTGCGCGGCACCAAGGCCCTGACCGAGGTGATTCCCTCACGGAGGAAGCCGAGCTCGAGCTGGCTGAGAA
CCGGGAGATCCTGAAGGAGCCCGTGACGGCGTGACTATGACCCCTCCAAGGACCTGATCGCCGAAATCC
AGAAGCAGGGCCAGGGGCAGTGGACATACCAGATTTACCAGGAGCCTTTCAAGAACCTCAAGACCGGCAAG
TACGCCCGCATGAGGGGCGCCACACCAACGATGTCAAGCAGCTGACCGAGGCCGTCCAGAAGATCACGAC
CGAGTCCATCGTGATCTGGGGGAAGACACCCAAGTTCAAGCTGCCTATCCAGAAGGAGACCTGGGAGACGT
GGTGGACCGAATATTGGCAGGCCACCTGGATTCCCGAGTGGGAGTTCTGTGAATACACCTCCTCTGGTGAAG
CTGTGGTACCAGCTCGAGAAGGAGCCCATCGTGGGCGCGGAGACATTCTACGTGGACGGCGCGGCCAACCG
CGAAACAAAGCTCGGGAAGGCCGGGTACGTCACCAACCGGGGCCGACAGAGTCTGTCACCCGTGACCGGACA
CCACCAACCAGAAGACGGAGCTGCAGGCCATCTATCTCGCTCTCCAGGACTCCCGCCTGGAGGTGAACATC
GTGACGGACAGCCAGTACGCGCTGGGCATTATTTCAGGCCCAGCCGGACCAGTCCGAGAGCGAAGTGGTGA
CCAGATTATCGAGCAGCTGATCAAGAAAGAGAAGGTCTACCTCGCCTGGGTCCCGGCCCATAGGGCATTG
GCGGCAACGAGCAGGTGACAAAGCTGGTGAAGTGCAGGGGATTAGAAAGGTGCTGATGGTGGGTTTTCCAGTC
ACACCTCAGGTACCTTTAAGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTTTAAAGAAAA
GGGGGACTGGAAGGGCTAATTCATCTCCCAAAGAAGACAAGATATCCTTGATCTGTGGATCTACCACACAC
AAGGCTACTTCCCTGATTGGCAGAACTACACACCAGGGCCAGGGGTGAGATATCCACTGACCTTTGGATGG
TGCTACAAGCTAGTACCAGTTGAGCCAGATAAGGTAGAAGAGGCCAATAAAGGAGAGAACACCAGCTTGT

```

Figure 28 continued

ACACCCTGTGAGCCTGCATGGGATGGATGACCCGGAGAGAGAAGTGTTAGAGTGGAGGTTTGACAGCCGCC
 TAGCATTTTCATCACGTGGCCCGAGAGCTGCATCCGGAGTACTTCAAGAACTGCATGGGTGCCCCGAGCTTCG
 GTACTGTCTGGTGGAGAGCTGGACAGATGGGAGAAAATTAGGCTGCGCCCGGAGGCAAAAAGAAATACAA
 GCTCAAGCATATCGTGTGGGCCTCGAGGGAGCTTGAACGGTTTGCCGTGAACCCAGGCCCTGCTGGAAACAT
 CTGAGGGATGTCGCCAGATCCTGGGGCAATTGCAGCCATCCCTCCAGACCCGGAGTGAAGAGCTGAGGTCC
 TTGTATAACACAGTGGCTACCCCTCTACTGCGTACACCAGAGGATCGAGATTAAGGATACCAAGGAGGCCTT
 GGACAAAATTGAGGAGGAGCAAAACAAGAGCAAGAAGAAGGCCAGCAGGCAGCTGCTGACACTGGGCATA
 GCAACCAGGTATCACAGAACTATCCTATTGTCCAAAACATTACAGGCCAGATGGTTCATCAGGCCATCAGC
 CCCCCGACGCTCAATGCCTGGGTGAAGGTTGTGCAAGAGAAGGCCTTTTCTCCTGAGGTTATCCCCATGTT
 CTCCGCTTTGAGTGAGGGGGCCACTCCTCAGGACCTCAATACAATGCTTAATACCGTGGGCGGCCATCAGG
 CCGCCATGCAAATGTTGAAGGAGACTATCAACGAGGAGGCAGCCGAGTGGGACAGAGTGCATCCCGTCCAC
 GCTGGCCCAATCGCGCCCGGACAGATGCGGGAGCCTCGCGGCTCTGACATTGCCGGCACCACCTCTACACT
 GCAAGAGCAAATCGGATGGATGACCAACAATCCTCCCATCCCAGTTGGAGAAATCTATAAACGGTGGATCA
 TCCTGGGCCTGAACAAGATCGTGCAGTGTACTCTCCGACATCCATCCTTGACATTAGACAGGGACCCAAA
 GAGCCTTTTAGGGATTACGTGCGACCGGTTTTATAAGACCCTGCGAGCAGAGCAGGCCTCTCAGGAGGTCAA
 AAATGGATGACGGAGACACTCCTGGTACAGAACGCTAACCCGACTGCAAAACAATCTTGAAGGCACTAG
 GCGCGCTGCCACCCTGGAAGAGATGATGACCGCTGTCAGGGAGTAGGCGGACCCGGACACAAAGCCAGA
 GTGTTGTAA [SEQ ID NO: 88]

Amino acid sequence of insert:

MGPISPIETVPVKLKPGMDGPKVKQWPLTEEKIKALVEICTEMEKEGKISKIGPENPNYTPVFAIKKCDST
 KWRKLVDFRELNRKTQDFWEVQLGIPHPAGLKKKKSVTVLDVGDAYFSVPLDEDFRKYTAFTIPSINNETP
 GIRYQYNVLPQGWKGSIPAIFQSSMTKILEPFRKQNPDIVIYQYMDDLTVGSDLEIGQHRTKIEELRQHLLR
 WGLTTPDKKHQKEPPFLKMGYELHPDKWTVQPIVLPEKDSWTVNDIQKLVGKLNWASQIYPGIKVRQLCKL
 LRGTALTEVIPLTEAELELAENREILKEPVHGVYDPSKDLIAEIQKQGQGWTYQIYQEPFKNLKTGK
 YARMGAHTNDVKQLTEAVQKITTESIVIWGKTPKFKLPIQKETWETWWTEYWQATWIPEWEFVNTPLVK
 LWYQLEKEPIVGAETFFYVDGAANRETKLGKAGYVTNRGRQKVVTLLDTTNQKTELQAIYLALQDSGLEVNI
 VTDSQYALGIIQAQPDQSESELVNQIIIEQLIKKEKVYLAWPVPAHKGIGGNEQVDKLVSAGIRKVLVGFPPV
 TPQVPLRPMTYKAAVDLSHFLKEKGGLEGLIHSQRRQDILDWYHTQGYFPDWQNYTPGPGVRYPLTFGW
 CYKLVPEPDKVEEANKGENTSLLHPVSLHGMDPEREVLEWRFD SRLAFHHVARELHPEYFKNCMGARAS
 VLSGGELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLLETSEGCROILGQLQPSLQTGSEELRS
 LYNTVATLYCVHQRIEIKDTKEALDKIEEQNKSKKKAQQAADTGHSNQVSQNYPIVQNIQGMVHQAI
 PRTLNAWVKVVEEKAFSPEVIMFSALESEGATPQDLNMLNTVGGHQAAMQMLKETINEEAAEWDRVHPVH
 AGPIAPGQMREPRGSDIAGTTSTLQEQIGWMTNNPPIPVGEIYKRWIIILGLNKIVRMYSPSTILDIRQGP
 EPFRDYVDRFYKTLRAEQASQEVKNWMTETLLVQANANPDCKTILKALGPAATLEEMMTACQGVGGPGHKAR
 VL [SEQ ID NO: 89]

Figure 29

A schematic representation of the constructs and associated expression data is shown below

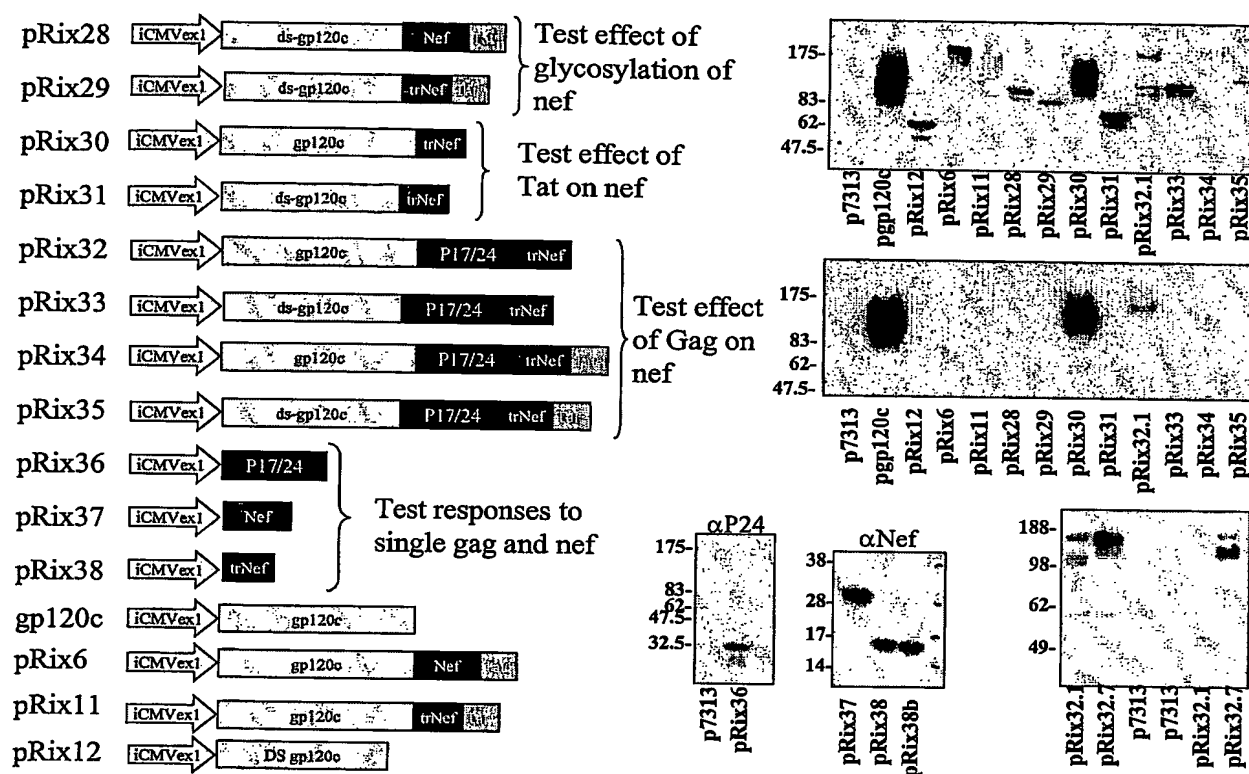
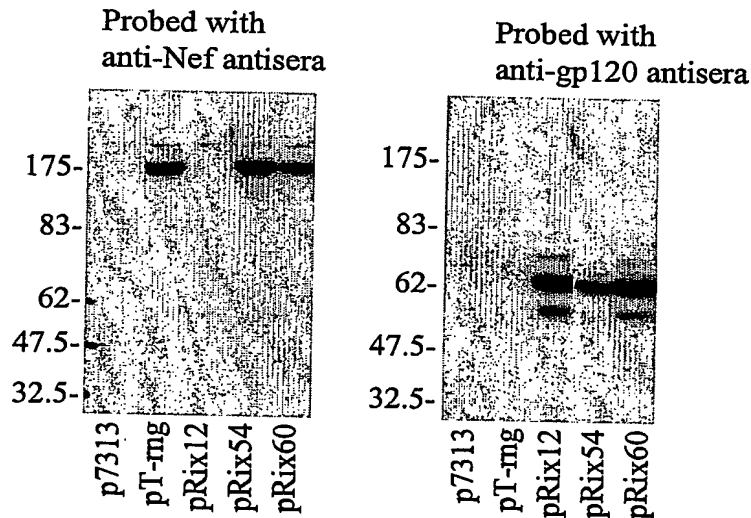


Figure 30

A schematic representation of further constructs and associated expression data:



Western blots probed with anti-nef (left) or anti-gp120 (right) antisera showing the expression of RNG and ds-gp120 from dual promoter and single vectors.

Plasmid schematics:

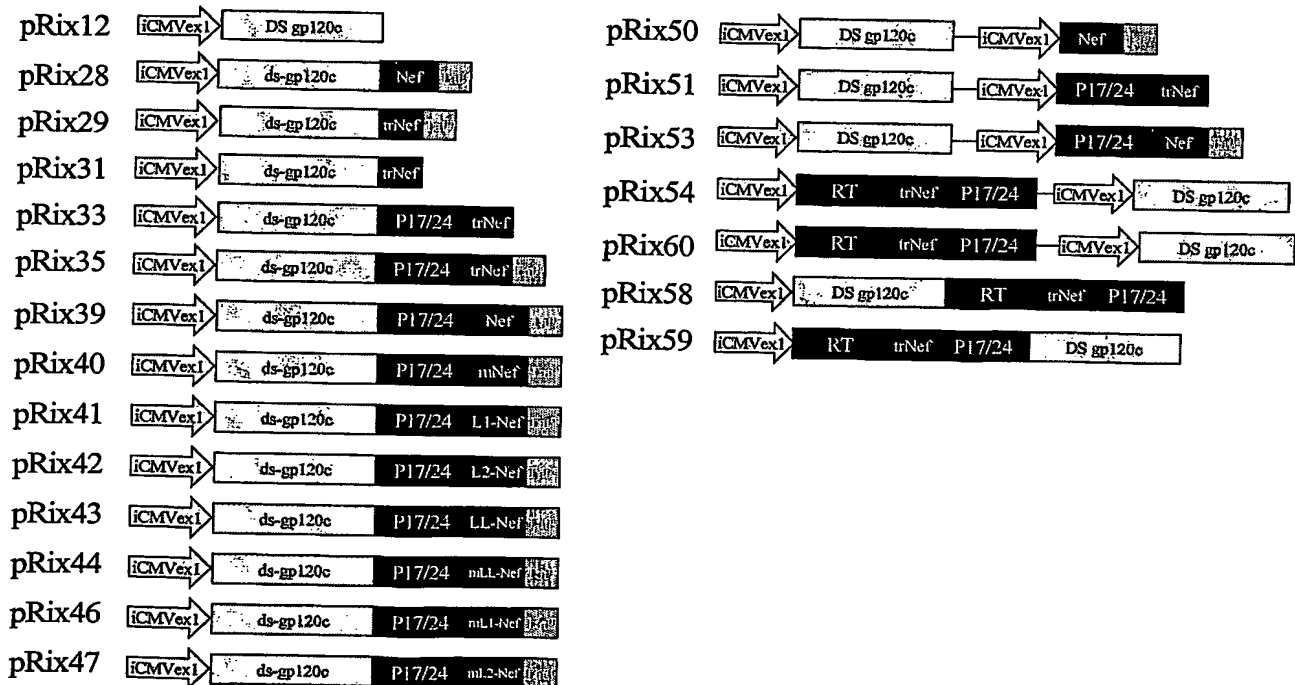
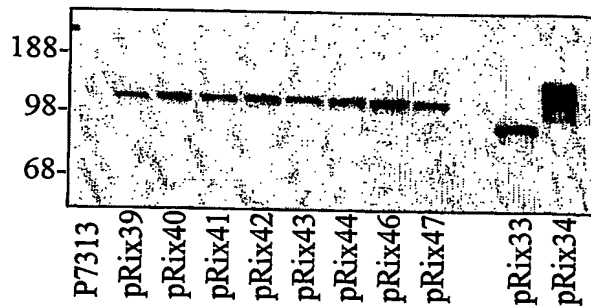


Figure 31

Expression data (anti-Nef) for dsGP120/Gag/Nef/Tat fusions with mutations in Nef (pRix 40-47)



Expression data (anti-Nef and anti-gp120) for dual promoter vectors

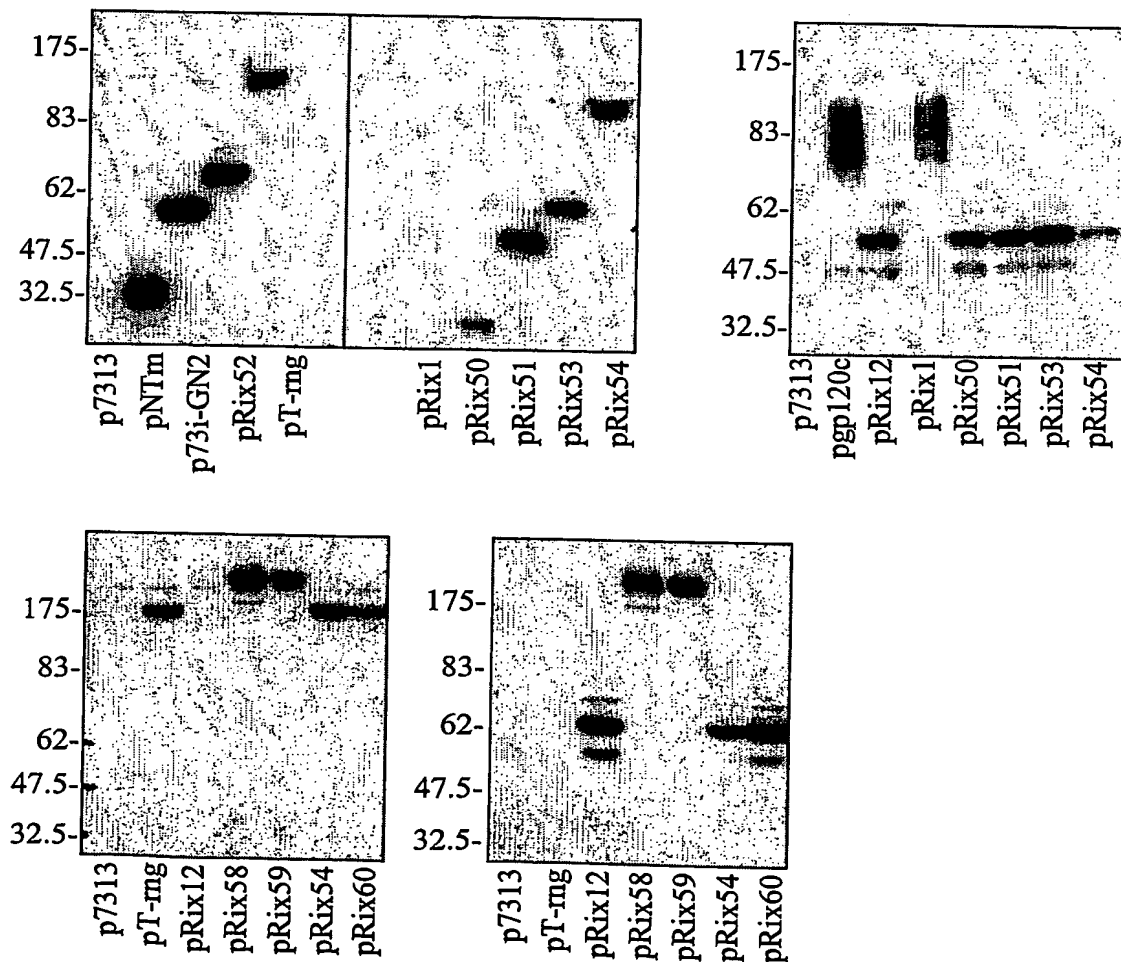


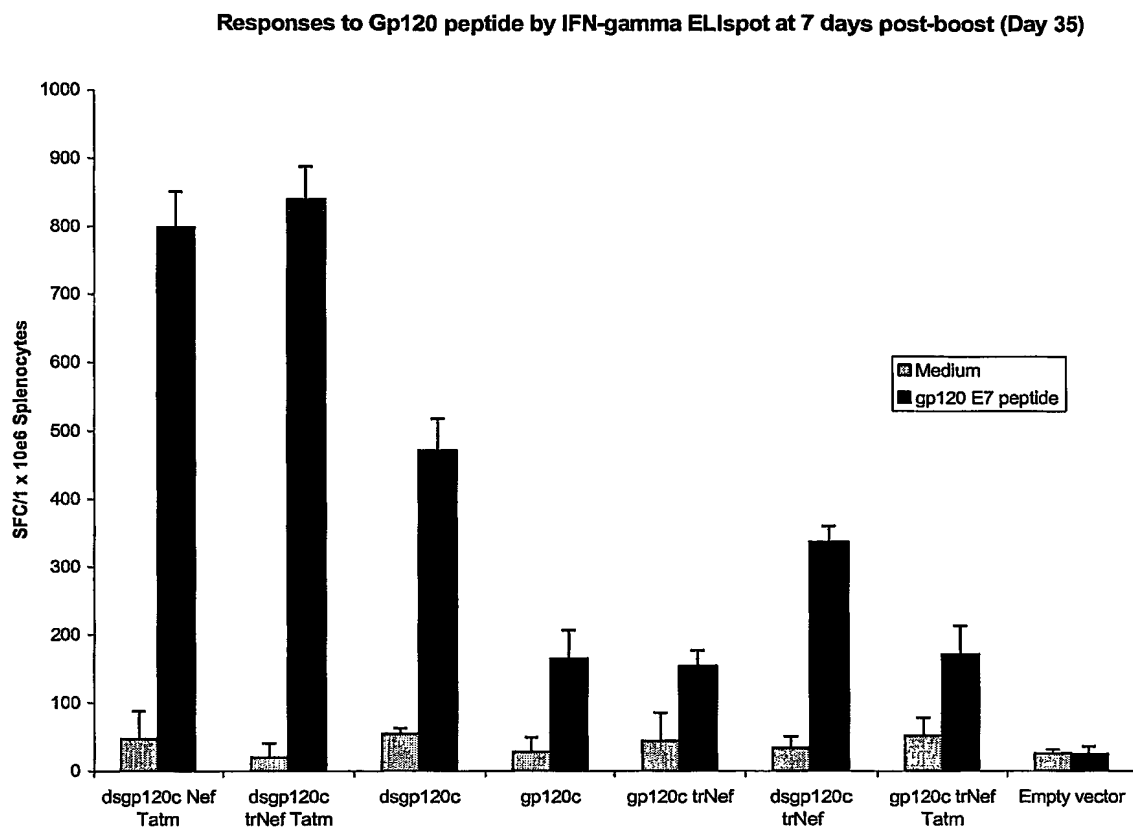
Figure 32

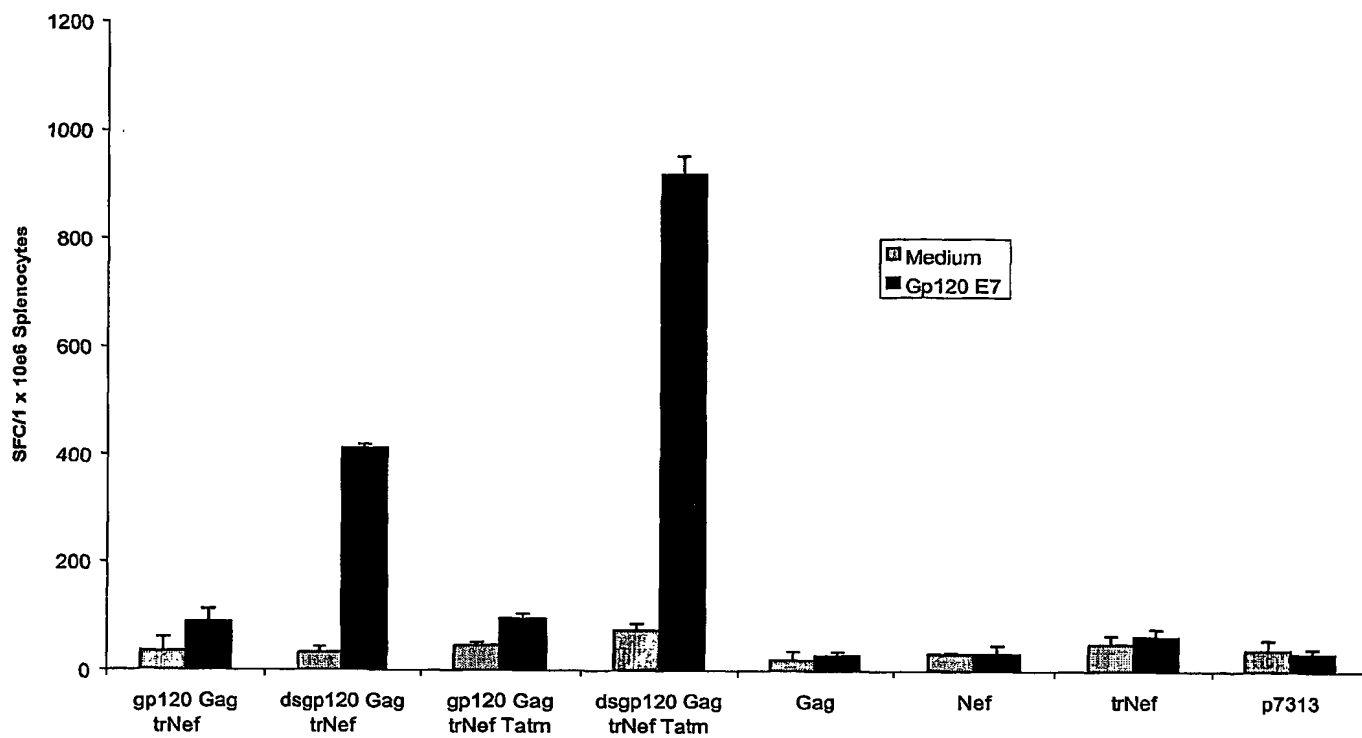
Figure 33**Responses to gp120 peptide by IFN-gamma ELIspot at 7 days post-boost (Day 35)**

Figure 34

Response to in vitro restimulation with Gp120, Gag and RT peptides at 7 days post-boost (Day 35)
using IFN-gamma ELISpot

